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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/590,420	08/23/2006	Shoichi Kishimoto	14434.107USWO	7030

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EXAMINER
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HOBAN, MATTHEW E

ART UNIT	PAPER NUMBER
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1793

MAIL DATE	DELIVERY MODE
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04/01/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/590,420	<b>Applicant(s)</b> KISHIMOTO ET AL.	
	<b>Examiner</b> Matthew E. Hoban	<b>Art Unit</b> 1793	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12/18/2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-6, 11, 12 and 16-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6, 11, 12 and 16-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>2/29/2008</u> .   | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Information Disclosure Statement***

1. The information disclosure statement filed 2/29/2008 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered.

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of

the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1-6, 11-12, and 16-18 rejected under 35 U.S.C. 103(a) as being unpatentable over Kakui et al in Patent Number 7,170,674 in view of Hiromi et al in JP2002-211950.

The claims of the instant application are drawn to a glass composition to be used in an optical fiber or optical amplifier, where the composition has the following characteristics:

- Optical Absorption Peak: 400-1100 nm
- Fluorescence Peak: 900-1600 nm (where, incident light is 900-1600 nm)
- FWHM: >320 nm
- Amplification obtained b/w 900-1600 nm
- Composition (in mol %)
  - 3-40% monovalent (MgO, CaO, SrO, BaO, or ZnO) or divalent (Li<sub>2</sub>O, Na<sub>2</sub>O or K<sub>2</sub>O) metal oxide
  - .01-5% bismuth oxide
  - .5-33% aluminum oxide

- 40-85% germanium dioxide
- .5-35 % MgO

In regards to claims 1-6, and 11-12: Kakui et al teaches compositions that are directly relevant to the claimed subject matter. Another of these compositions, denoted as glass sample F, has the following properties:

- Optical Absorption Peak: 500 and 700 nm (Column 5, Lines 65-67)
- Fluorescence Peak: 1250 nm (using 800 nm laser light) (Figure 2)
- FWHM: ~330 (Figure 2, calculated using method disclosed in Specification of instant application)
- Amplification obtained around Fluorescence Peak @ 1250 nm (Figure 2)
- Composition (in mol %) (Column 5, Lines 21-24)
  - 5% CaO
  - .8% bismuth oxide
  - 5% aluminum oxide
  - 90% Germanium dioxide

The specification and claims state that a minimum of 50 mol % germanium dioxide is necessary to make the invention of Kakui (See Abstract, Summary of the Invention Column 2, Lines 22-25, Description of the invention Column 4, Lines 58-62 and Column 16, Lines 4-6, or Claim 1). The difference between the instantly claimed range and the composition given in the specific example F in Kakui's Patent is 5%. In light of the fact that it is explicitly stated that the amount of germanium dioxide can be as

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low as 50 mol percent, the composition as claimed by the instant application is not patently distinct over the teachings of Kakui. This is due to the fact that Kakui discloses that the invention is useful down to 50 mol %, and for this reason effectively teaches the range from 50-90 mol% of germanium dioxide. Thus, the properties, performance and composition of the two products are exactly the same.

### **Alternatively**

Kakui et al teach that the optical amplifier fibers can be comprised of any of the disclosed embodiments of their invention, where compositions D, F and G of their disclosure uses germanium dioxide as a glass network former, bismuth oxide as a fluorescing source, and aluminum oxide as a deflocculant (see column 5 and column 8, line 38-40). It is taught that the optical amplification fibers can guide pumping light (injected excitation light) and signal light while being able to optically amplify the signal light when supplied with the pumping light.

The difference between Kakui and the instant claims is the fact that the instant claims uses 40-85 mol %, while Kakui's specific example uses 90% germanium oxide.

However, Kakui teaches that other oxides can be used interchangeably as a glass network former. Specifically Kakui teaches that Silica and  $P_2O_5$  are suitable as substitutes. This lesson is obvious throughout the application. Kakui goes on to teach the following compositions:

#### Composition I

- 30% BaO
- 0.8% bismuth oxide

- 10% aluminum oxide
- 60%  $P_2O_5$

Composition J

- 15%  $B_2O_3$
- 0.8% bismuth oxide
- 5% aluminum oxide
- 80% silica

Composition K

- 40%  $Na_2O$
- 0.8% bismuth oxide
- 5% aluminum oxide
- 55% silica

It would be obvious to one of ordinary skill in the art to replace the  $P_2O_5$  or alternatively the silica, in one the preceding example with germanium dioxide, since the three species of oxides are all equally suitable at forming a glass network. Upon doing so, a composition reading exactly on the claims of the instant application would be obtained. Furthermore, according to Kakui and Figures 3 and 5, the I and J compositions above have optical properties substantially similar to those of compositions D and F mentioned above. The interchanging of these species would be

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well within the capabilities of anyone experienced in the forming process of optical fibers, as these three substances are used quite often in the optics industry.

Under either way of viewing the teachings of Kakui in relation to the prior art, Kakui fails to teach the use of magnesium oxide as a monovalent metal oxide in the composition, where this oxide must be present from .5 to 35 mol%.

However, Hiromi et al in JP 2002-211950 teach an optical amplification glass of similar composition, where the glass includes Bismuth as a fluorescing species, as well as germania, and other network formers. At paragraph [0025] of this patent, Hiromi states that the inclusion of oxides such as ZnO, MgO, CaO, SrO, and BaO are indispensable in the glass composition, as they help to control the devitrification of the glass during fiber processing. These oxides can be present in an amount up to 20 mol%. Furthermore, Hiromi gives examples of the use of MgO in his examples as a vitrification modifier, where it is used at 1.5%.

Therefore, upon reading the disclosure of Hiromi, one of ordinary skill in the art would realize that the addition of MgO would also positively affect the glass composition and its processing properties. Furthermore, one of ordinary skill would see MgO as a suitable replacement for other divalent metal oxides based on the teachings of Hiromi. Based on the fact that Hiromi groups these together, it would seem fitting that an oxide such as MgO could replace an oxide such as CaO and BaO and have substantially the



same beneficial effect on processing. Therefore, one of ordinary skill would expect that the replacement of MgO for CaO or BaO in any of the previously mentioned compositions would give a successful and expected result, where that result is a glass composition with better processability. Finally, the replacement of these oxides would not affect the optical properties of the glass, since these properties are affected by the Bismuth Oxide, as well as the aluminum oxide. Therefore, the optical properties of this glass would be the same as that which is claimed.

In regards to claim 16-18: Kakui et al teach that the optical amplifier fibers can be comprised of any of the disclosed embodiments of their invention, where compositions D, F and G of their disclosure uses germanium dioxide as a glass network former, bismuth oxide as a fluorescing source, and aluminum oxide as a deflocculant (see column 5 and column 8, line 38-40). It is taught that the optical amplification fibers can guide pumping light (injected excitation light) and signal light while being able to optically amplify the signal light when supplied with the pumping light. The composition of Kakui in view of Hiromi would be equally useful in this endeavor, since Hiromi only teaches additional devitrifying agents in regards to Kakui.

In regards to all of the above: Therefore the claimed invention has been readily envisaged at the time the invention was made. Even if there is some difference in the amount of glass network former, a small change in the amount of glass network former

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does not constitute a critical change in the composition of the glass. The germanium dioxide is only as a networking agent, where the aluminum oxide, bismuth oxide, and the monovalent or divalent oxide are critical, wherein they respectively prevent flocculation of Bi, fluoresce, and increase homogeneity. Germanium dioxide is only necessary to the point, where it performs its purpose as a glass network former, which it is capable of doing at 90%, but also at a concentration of 50%, as is disclosed by Kakui. The monovalent or divalent oxide MgO is also known as a devitrifying agent in these glasses as taught by Hiromi. For this reason, these differences do not render the instant application as patentably distinct. Therefore, the claims are properly rejected over the teachings of the prior art on the record.

1. Applicant's arguments with respect to claim 1 have been considered but are moot in view of the new ground(s) of rejection. This is due to the fact that all arguments against Kakui were directed towards the fact that Kakui offers no direct teaching of the use of MgO within the composition. The rejection under Kakui in view of Hiromi, however, does teach the use of MgO in a composition, rendering applicants arguments directed at the patentability of the instant claims moot.

2. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew E. Hoban whose telephone number is (571) 270-3585. The examiner can normally be reached on Monday - Friday from 7:30 AM to 5 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo can be reached on (571) 272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jerry A Lorengo/  
Supervisory Patent Examiner, Art Unit 1793

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